

Math 232 Calculus 2 Fall 12 Sample midterm 2

- (1) Find $\int_0^{\pi/2} \sin^3(x) \cos^2(x) dx$.
- (2) Find $\int \cos(3x) \cos(5x) dx$.
- (3) Find $\int \frac{x^2}{\sqrt{x^2 + 1}} dx$.
- (4) Find $\int \frac{x^2 + 11x}{(x - 1)(x + 1)^2} dx$.
- (5) Find $\int_0^1 x \ln x \, dx$.
- (6) Find $\int_0^\infty \frac{1}{4 + x^2} \, dx$.
- (7) Find the center of mass of the region above the x -axis and below the curve $y = x^2 - 4x$.
- (8) Find the degree three Taylor polynomial centered at $x = 1$ for the function $f(x) = \sqrt{2x + 1}$.
- (9) Does the series $\sum_{n=1}^{\infty} \frac{\ln n}{n^3}$ converge or diverge?
- (10) Does the series $\sum_{n=1}^{\infty} \sin(\frac{1}{n})$ converge or diverge? (Hint: draw graph of $\sin(x)$ and think about the comparison test.)